

North Branch Susquehanna River Terrytown to Northumberland

Summer 2015 Wild Muskellunge Evaluation

While seining the North Branch Susquehanna River in 1986, Professor Brian Mangan, PhD, Kings College, Wilkes-Barre, captured four juvenile Muskellunge (Mangan 1986). He knew the fish resulted from natural reproduction because the Pennsylvania Fish and Boat Commission (PFBC) had not yet stocked Muskies in the river that year. Professor Mangan's fish were the first documented evidence of Muskellunge reproduction in the North Branch. Since that time, small wild Muskellunge have occasionally shown up in the PFBC's annual surveys of juvenile Smallmouth Bass. However, these surveys generally take place in shallow, gravel-bottomed areas with current. Juvenile Muskies don't favor this type of habitat so we were unaware of their true density or of the extent of natural reproduction in the river.

In accordance with the PFBC's statewide Musky plan, Area 4 biologists sampled wild juvenile Muskellunge in the North Branch Susquehanna River between July 20 and August 19, 2015. The survey took place at 38 sampling sites located between the Terrytown (Bradford County) and Northumberland (Northumberland County) boat launches. We used backpack electrofishing to sample the Muskies. Sampling sites averaged 300 meters long and were located in preferred habitat types of juvenile Muskies. These habitat types had little current and usually included extensive weed beds and/or areas with woody cover and muck bottoms (Figure 1).

We captured 15 wild juvenile Muskellunge during this work (Figure 2). The fish ranged from 155 mm (6.10 inches) to 235 mm (9.25 in) long. Mean catch rates were: 0.39 Muskies per site; 1.30 Muskies per kilometer; and 1.22 Muskies per hour. In addition to the 15 wild Muskies we captured during the targeted survey, we captured one during annual juvenile Smallmouth Bass collections. This fish was captured at Great Bend in Susquehanna County.

Capture of wild Muskellunge from Great Bend to Northumberland shows that Muskies reproduce throughout the

length of the North Branch Susquehanna River. But, there are some things we don't know. For example, this study gave us one year's perspective on Muskellunge reproduction. Natural reproduction of most freshwater fish species is very variable from year to year, based upon annual Smallmouth Bass and Walleye surveys, and we don't know if 2015 was a really good year or a really poor year for Musky reproduction and survival. Another thing we don't know is whether or not the level of reproduction we observed in the North Branch Susquehanna River is sufficient to sustain the fishery without stocking. These questions will be answered through additional study in the coming years.

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Citations:

Mangan, B.P. 1986. Natural reproduction of the Muskellunge (*Esox masquinongy*) in the Susquehanna River near Berwick, Pennsylvania. Proceedings of the Pennsylvania Academy of Science 60: 200.



Figure 1. Nursery habitat for juvenile Muskellunge on the North Branch Susquehanna River.



Figure 2. A wild juvenile Muskellunge from the North Branch Susquehanna River. This fish was captured at Terrytown on August 19, 2015. It measured 235 mm (9.25 inches) long.